

Maternal Eating Disorders and Early Infant Growth: Mechanisms, Evidence, and Clinical Implications

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Abstract

Background: Eating disorders (EDs)—including anorexia nervosa (AN), bulimia nervosa (BN), binge-eating disorder (BED), and purging disorder (PD)—commonly affect women of reproductive age. Growing evidence suggests that maternal ED history influences fetal development, birth outcomes, and the trajectory of infant growth during the critical first year and early childhood.

Objective: This narrative review synthesizes the current literature examining the relationship between maternal EDs and early infant growth, from intrauterine development through the first years of life, and considers the biological, behavioral, and psychosocial mechanisms that may explain the observed associations.

Methods: Peer-reviewed cohort studies, systematic reviews, and meta-analyses published between 1988 and 2023 were reviewed. Key population-based cohorts—including the Norwegian Mother and Child Cohort Study (MoBa) and the Avon Longitudinal Study of Parents and Children (ALSPAC)—provided the strongest evidence base.

Results: Maternal AN is consistently associated with lower birth weight, small-for-gestational-age status, and reduced infant weight-for-length growth. Maternal BED and, in some cohorts, BN are associated with larger birth size and more rapid postnatal growth. Feeding difficulties, altered dietary patterns, retarded head growth, and subtle neurocognitive delays have also been documented in offspring of affected mothers. Pregravid body mass index (BMI) and gestational weight gain mediate many of these associations.

Conclusion: Maternal ED history represents a modifiable risk factor for atypical infant growth. Preconception and antenatal screening, coordinated multidisciplinary care, and sensitive infant feeding support may reduce adverse outcomes.

Keywords: anorexia nervosa, bulimia nervosa, binge-eating disorder, infant growth, birth weight, maternal nutrition, developmental origins of health and disease

1. Introduction

Eating disorders are serious psychiatric conditions characterized by persistent disturbances in eating behavior, distorted body image, and dysfunctional attitudes toward weight and shape. They predominantly affect adolescent girls and young women, a demographic that overlaps substantially with the childbearing years. Because pregnancy places unique physiological and

psychological demands on the body—including significant weight gain, changes in body shape, and altered nutritional requirements—it can be a particularly challenging period for women who have a current or past eating disorder.

Over the past three decades, researchers have increasingly examined whether maternal eating disorders leave a measurable imprint on offspring. Early clinical case series raised concern that children of affected mothers might experience impaired growth, feeding conflict, and nutritional compromise. Subsequent large, population-based cohort studies have allowed these associations to be tested with far greater statistical power and better control for confounding factors.

The first year of life is a period of extraordinary growth and neurodevelopmental plasticity. Patterns of growth established during infancy—whether faltering or excessively rapid—carry implications that extend well beyond childhood. Rapid infant weight gain has been linked to later obesity and cardiometabolic disease, whereas growth faltering and reduced head growth have been associated with impaired neurocognitive development. Understanding how maternal eating disorders shape early growth therefore has relevance not only for pediatric practice but also for the long-term public health of the next generation.

This review aims to synthesize the evidence on maternal eating disorders and early infant growth. It considers effects across three developmental windows: the intrauterine period (reflected in birth outcomes), the first year of life (weight, length, and feeding), and early childhood (growth trajectories and neurodevelopment). It further explores the mechanisms—biological, behavioral, and psychosocial—that may underlie these associations and discusses the clinical and public health implications.

2. Eating Disorders in Women of Reproductive Age

2.1 Classification and Prevalence

The current diagnostic framework recognizes several distinct eating disorder subtypes. **Anorexia nervosa (AN)** is defined by restriction of energy intake leading to significantly low body weight, an intense fear of weight gain, and disturbance in the way body weight or shape is experienced. **Bulimia nervosa (BN)** involves recurrent episodes of binge eating followed by inappropriate compensatory behaviors such as self-induced vomiting, laxative misuse, fasting, or excessive exercise. **Binge-eating disorder (BED)** is characterized by recurrent binge eating without regular compensatory behavior and is often accompanied by overweight or obesity. **Purging disorder (PD)** describes recurrent purging in the absence of objective binge eating.

Lifetime prevalence estimates in European community samples are approximately 0.5% for AN, 0.5% for BN, and 1% for BED, though broader definitions and the inclusion of subthreshold presentations substantially increase these figures. Importantly, studies of pregnant populations suggest that eating disorders are more common in this group than is often assumed; one United Kingdom study reported that as many as 7.5% of pregnant women met criteria for an eating disorder at some point, and cohort studies have documented meaningful prevalences of active disorders during pregnancy itself.

2.2 The Perinatal Period as a Vulnerable Window

Pregnancy and the postpartum period represent a time of heightened vulnerability. For some women, pregnancy provides motivation to reduce disordered behaviors "for the sake of the baby," and rates of certain symptoms decline. For others, the required weight gain, altered body shape, and loss of control over the body can exacerbate symptoms or trigger relapse. Eating disorder symptoms during pregnancy fluctuate, with some women experiencing remission and others experiencing continuation or new onset of symptoms. This variability complicates research and clinical care, since a mother's disorder status may differ before, during, and after pregnancy.

3. Maternal Eating Disorders and Intrauterine Growth: Birth Outcomes

Because birth size reflects the cumulative effect of the intrauterine environment, birth outcomes provide the earliest measurable window into how maternal eating disorders may influence offspring growth.

3.1 Anorexia Nervosa and Reduced Birth Size

The most consistent finding in the literature is the association between maternal AN and reduced fetal growth. A landmark early observation by Treasure and Russell documented impaired intrauterine growth and reduced neonatal weight gain in babies of women with anorexia nervosa. Subsequent population-based studies and pooled analyses have confirmed and quantified this relationship.

A systematic review and meta-analysis reported that maternal AN was associated with a substantial increase in the odds of low birth weight (odds ratio approximately 1.74) and small-for-gestational-age status (odds ratio approximately 1.39). A separate meta-analysis focused specifically on birth weight found that infants of mothers with AN weighed, on average, meaningfully less than those of unaffected mothers. These findings are biologically plausible: women with AN frequently enter pregnancy underweight, and low pre-pregnancy BMI is itself a recognized risk factor for delivering a small or low-birth-weight infant.

3.2 Binge-Eating Disorder and Larger Birth Size

At the opposite end of the spectrum, maternal BED has been repeatedly linked to *larger* birth size. Analyses from the Norwegian Mother and Child Cohort Study (MoBa) demonstrated that maternal BED was associated with higher birth weight and an increased risk of large-for-gestational-age (LGA) infants. A meta-analysis estimated the odds of LGA to be increased by roughly 43% in mothers with BED. This pattern is consistent with the tendency toward higher pre-pregnancy BMI, ongoing binge eating during pregnancy, and greater gestational weight gain observed in women with BED.

3.3 Bulimia Nervosa and Mixed Outcomes

Findings for BN are more heterogeneous. Some studies report an association between BN and preterm birth—one meta-analysis estimated a 19% increase in the odds of preterm delivery—while associations with birth weight are inconsistent. Register-based and three-generation cohort analyses have found BN associated with obstetric interventions such as induced labor, and with an elevated risk of gestational diabetes when lifetime BN is considered.

3.4 Disentangling Maternal Effects from Familial Transmission

A methodological challenge in this field is that many perinatal traits—birth weight, birth length, gestational age, and pre-eclampsia—are partly heritable and may be transmitted across generations independently of the mother's eating disorder. An innovative three-generation analysis linking grandmothers, mothers, and infants demonstrated that several associations between maternal EDs and perinatal outcomes persisted even after adjusting for the corresponding outcome in the grandmother's pregnancy. For instance, maternal AN remained associated with shorter birth length after such adjustment, supporting a genuine effect of the eating disorder rather than a purely familial artifact. Importantly, that study also showed that maternal pre-pregnancy BMI and gestational weight gain mediated the majority of these associations, pointing to nutritional status as a central pathway.

4. Growth During the First Year of Life

Birth size sets a starting point, but the trajectory of growth over the first year is equally consequential. Several cohorts have specifically examined weight, length, and feeding in the offspring of mothers with eating disorders.

4.1 Weight-for-Length Trajectories

A large analysis within the MoBa cohort examined weight-for-length trajectories from birth to twelve months across ED subtypes. Children of mothers reporting any eating disorder demonstrated a *lower* weight-for-length growth rate over the first year compared with children of unaffected mothers. Crucially, this difference persisted even after adjustment for relative birth weight and other known confounders, suggesting that the growth difference was not merely a continuation of a smaller birth size but reflected ongoing postnatal influences. The authors emphasized that these growth differences warranted further investigation of long-term health outcomes.

4.2 Feeding Difficulties and Weight in Infancy

Feeding is the primary mechanism through which mothers directly influence infant growth, and it is an area in which maternal eating pathology may readily manifest. Research using the ALSPAC cohort found that infants of women with eating disorders experienced more feeding difficulties in the first year of life and showed differences in weight compared with unaffected peers. Maternal and child factors appeared to jointly mediate the relationship between maternal ED and infant feeding problems.

Observational studies of mother–infant interactions during mealtimes have documented greater conflict, more intrusive feeding practices, and heightened maternal concern about the infant's shape and weight among mothers with eating disorders. Such dynamics can plausibly translate into altered energy intake and, over time, into measurable differences in growth. A comparative study of infant growth in the context of both maternal eating disorders and maternal depression found lower weight gain at one year among infants of mothers with EDs relative to control infants.

4.3 Breastfeeding Patterns

Feeding difficulties may begin at the very earliest stages of infant nutrition. Some research suggests that women with extreme attitudes toward body shape may be more reluctant to breastfeed, or may experience breastfeeding differently. Because breastfeeding duration and the timing of introduction of solid foods influence infant growth patterns and later obesity risk, differences in these behaviors among mothers with EDs represent a potential pathway linking maternal disorder to infant growth.

5. Head Growth and Neurodevelopment

Growth in infancy is not limited to weight and length; head circumference serves as a proxy for brain growth and is an important indicator of neurodevelopment.

A longitudinal cohort study conducted in Sweden followed children of mothers with a history of eating disorders alongside controls. While infants of affected mothers demonstrated an early catch-up in body mass index by three months of age, their average head circumference remained smaller throughout the observation period, up to at least eighteen months. This reduced head growth was observed in both the AN and BN subgroups. Importantly, the children of mothers with EDs also scored higher on a validated parental questionnaire indicating difficulties in language skills, and head circumference at birth correlated with later language performance. These findings suggest that the influence of maternal eating disorders may extend beyond somatic growth to encompass neurocognitive development, potentially through mechanisms related to intrauterine nutrition and fetal growth restriction.

6. Growth Trajectories in Early Childhood

Beyond infancy, longitudinal studies have tracked how early growth differences evolve through the preschool and early school years.

Using the ALSPAC cohort, researchers modeled growth trajectories from birth to ten years in children of women with AN, BN, both disorders, and other psychiatric conditions. The findings revealed notable subtype- and sex-specific patterns:

- **Height:** Male children of mothers with BN tended to be taller across childhood, whereas male children of mothers with both AN and BN, and female children of mothers with AN, tended to be shorter. This suggested that children of mothers with AN may be at particular risk of reduced or stunted growth.
- **Adiposity:** Between ages two and five, higher BMI was observed among male children across all maternal ED groups. Female children of mothers with BN showed higher early-childhood BMI that converged toward the comparison group by age ten, whereas female children of mothers with AN showed lower early BMI with later catch-up.

The observation that children of mothers with *other psychiatric disorders* had different (and often less pronounced) patterns supported the interpretation that some growth effects were relatively specific to eating pathology rather than to maternal mental illness in general. The authors proposed that whereas growth differences in children of mothers with general psychiatric

conditions might be driven more by intrauterine processes, the differences in the ED group were more likely attributable to postnatal factors such as feeding and diet.

Complementary work on dietary patterns has shown that children of mothers with EDs are more likely to follow "health-conscious" or vegetarian dietary patterns and less likely to follow "traditional" patterns, which may have implications for their nutrient intake and physical development.

7. Mechanisms Linking Maternal Eating Disorders to Infant Growth

The associations described above are best understood as the product of multiple, often overlapping, pathways.

7.1 Nutritional and Metabolic Pathways

Maternal nutritional status is the most direct and best-supported mechanism. In AN, chronic energy restriction and low pre-pregnancy BMI limit the nutrient supply available for fetal growth, contributing to intrauterine growth restriction, low birth weight, and small-for-gestational-age status. In BED, higher pre-pregnancy BMI, continued binge eating, and excessive gestational weight gain create an overnourished intrauterine environment associated with fetal overgrowth and LGA. Mediation analyses consistently identify pregravid BMI and gestational weight gain as key intermediaries, indicating that a substantial portion of the effect of maternal EDs operates *through* maternal body weight and weight change.

7.2 Feeding Behavior and the Feeding Relationship

After birth, the feeding relationship becomes a powerful influence. Mothers with eating disorders may hold distinctive beliefs and anxieties about food, weight, and their child's body, which can shape feeding practices—ranging from restrictive control to disorganized or conflictual mealtime interactions. These behaviors can affect the infant's energy intake and self-regulation, potentially explaining why postnatal growth differences persist even after accounting for birth size.

7.3 Psychological and Psychosocial Factors

Comorbid anxiety and depression are common among individuals with eating disorders and can independently affect maternal caregiving, responsiveness, and feeding. Maternal stress may also influence infant appetite regulation and growth. Because eating disorders rarely occur in isolation, disentangling the specific contribution of the eating disorder from that of coexisting psychopathology remains an ongoing challenge.

7.4 Genetic and Epigenetic Contributions

Eating disorders are heritable, and some perinatal phenotypes are transmitted across generations. Shared genetic liability and potential epigenetic programming—through which the intrauterine environment influences gene expression—may contribute to both the eating disorder and the offspring growth pattern. The persistence of certain associations after adjustment for grandmaternal outcomes suggests that genuine intergenerational effects operate alongside familial transmission.

8. Clinical and Public Health Implications

8.1 Screening and Identification

Eating disorders are frequently concealed, and pregnancy offers a natural point of contact with the healthcare system. Routine, sensitive screening for current and past eating disorders during preconception counseling and antenatal care could identify at-risk women who might otherwise go undetected. Given the documented association between lifetime ED history and adverse outcomes, screening should not be limited to women with active symptoms.

8.2 Multidisciplinary Care

Optimal management involves coordination among obstetricians, midwives, dietitians, mental health professionals, and pediatricians. Nutritional support aimed at achieving healthy pre-pregnancy weight and appropriate gestational weight gain

addresses the principal mediating pathway. Because the risk profile differs by subtype—undernutrition and growth faltering in AN versus overnutrition and excessive growth in BED—care should be tailored accordingly.

8.3 Supporting the Feeding Relationship

Since postnatal feeding appears to be an important and potentially modifiable determinant of infant growth in this population, interventions that support responsive feeding and reduce mealtime conflict may be valuable. Health visitors and pediatric providers should monitor the growth of infants of mothers with known ED histories and remain alert to both faltering growth and excessively rapid weight gain.

8.4 A Life-Course and Intergenerational Perspective

The associations reviewed here fit within the "developmental origins of health and disease" framework, in which early growth influences lifelong health. Reduced infant growth and head growth may carry neurodevelopmental consequences, whereas rapid infant weight gain elevates later obesity and cardiometabolic risk. Moreover, children of mothers with EDs may themselves be at elevated risk of developing eating disorders, raising the possibility of an intergenerational cycle that early intervention might help to interrupt.

9. Special Considerations Across Eating Disorder Subtypes

Because the eating disorders differ markedly in their behavioral and metabolic features, their consequences for infant growth are best considered subtype by subtype. Appreciating these differences helps clinicians anticipate the specific risks a given mother–infant dyad may face.

9.1 Anorexia Nervosa

Anorexia nervosa poses the clearest threat of undernutrition. Women who enter pregnancy underweight, or who continue to restrict intake during gestation, transmit a constrained nutrient supply to the developing fetus. The downstream consequences—lower birth weight, small-for-gestational-age status, shorter birth length, reduced head growth, and slower weight-for-length gain during infancy—form a coherent pattern of growth restriction. Of particular concern is the finding that reduced head growth may accompany subtle delays in early language development, suggesting that the effects of maternal AN reach beyond body size into the domain of neurodevelopment. Clinically, infants of mothers with AN merit close growth surveillance and prompt attention to any evidence of faltering growth.

9.2 Bulimia Nervosa

Bulimia nervosa presents a more variable picture. The cyclical pattern of bingeing and compensatory behavior produces an inconsistent nutritional environment, which may partly explain the heterogeneous findings across studies—ranging from associations with preterm birth to relatively taller stature among some male offspring in childhood. Electrolyte disturbances and dehydration arising from purging behaviors are additional physiological concerns during pregnancy. The mixed evidence base underscores the importance of individualized assessment rather than reliance on a single expected outcome.

9.3 Binge-Eating Disorder

Binge-eating disorder sits at the opposite pole from AN with respect to growth. Higher pre-pregnancy body mass index, continued binge eating during pregnancy, and excessive gestational weight gain create an overnourished intrauterine environment associated with larger birth size, an increased likelihood of large-for-gestational-age infants, and more rapid early growth. Because rapid infant weight gain is itself a recognized precursor of later childhood obesity and cardiometabolic disease, the offspring of mothers with BED may face long-term metabolic risks that differ fundamentally from the growth-restriction concerns seen in AN.

9.4 Purging Disorder and Other Presentations

Purging disorder and other specified feeding or eating disorders remain comparatively under-characterized, in part because they occur in smaller numbers within research cohorts. Nonetheless, the compensatory behaviors central to these presentations—such

as self-induced vomiting or laxative misuse—carry the same physiological hazards of electrolyte imbalance and nutritional depletion that warrant clinical vigilance during pregnancy and the postpartum period.

10. A Framework for Perinatal Care of Women with Eating Disorders

Translating the evidence into practice requires an organized, stage-based approach that spans the entire perinatal journey, from before conception through the infant's first years. The following framework integrates the findings reviewed above into concrete points of clinical action.

10.1 The Preconception Stage

The preconception period offers a valuable and often overlooked opportunity. Where an eating disorder is known or suspected, supporting a woman toward nutritional stability and a healthy body weight *before* pregnancy directly addresses the pre-pregnancy body mass index that mediates so many downstream outcomes. Preconception counseling also allows clinicians to discuss realistic expectations about pregnancy-related weight gain and body changes, which can reduce distress and the risk of relapse once pregnancy begins.

10.2 The Antenatal Stage

During pregnancy, sensitive and non-judgmental inquiry about current and past eating behavior should form part of routine care, since eating disorders are frequently concealed. Monitoring gestational weight gain against appropriate targets, providing individualized dietary guidance, and watching for warning signs such as inadequate weight gain, dehydration, or electrolyte disturbance are all central tasks. Fetal growth should be monitored, with awareness that both undergrowth (in AN) and overgrowth (in BED) are possible depending on the maternal subtype.

10.3 The Postnatal and Infancy Stage

After birth, attention shifts toward the feeding relationship, which the evidence identifies as a key and modifiable determinant of infant growth. Support for responsive feeding, guidance around breastfeeding, and gentle strategies to reduce mealtime conflict can help protect the infant's growth trajectory. Regular plotting of infant weight, length, and head circumference on standard growth charts enables early detection of both faltering growth and excessively rapid weight gain, prompting timely intervention.

10.4 The Role of the Multidisciplinary Team

No single professional can address the full spectrum of needs. Effective care depends on coordination among obstetricians, midwives, dietitians, mental health clinicians, health visitors, and pediatricians, ideally with clear communication pathways so that the mother's eating disorder history informs the care of her infant. Embedding mental health support within maternity services helps ensure that comorbid anxiety and depression—common accompaniments of eating disorders—are also treated, since these conditions can independently influence caregiving and feeding.

10.5 Interrupting the Intergenerational Cycle

Finally, the perinatal period represents a strategic window for interrupting the potential intergenerational transmission of eating disorders and disordered growth. By stabilizing the mother's illness, optimizing nutrition, and fostering a healthy feeding relationship, coordinated care may benefit not only the immediate pregnancy and infancy but also the longer-term physical and psychological health of the child. Viewed through this life-course lens, investment in the care of mothers with eating disorders yields returns that extend across two generations.

11. Conclusion

The accumulated evidence indicates that maternal eating disorders are associated with distinct and clinically meaningful patterns of early infant growth. Anorexia nervosa is linked to reduced fetal and infant growth, small-for-gestational-age status, and reduced head growth with possible neurodevelopmental implications, while binge-eating disorder is associated with larger birth size and more rapid growth. Bulimia nervosa shows a more variable profile. These associations are mediated substantially by

maternal pre-pregnancy weight and gestational weight gain, and are shaped further by feeding behavior, psychological factors, and intergenerational transmission. Maternal ED history is thus a modifiable risk factor that warrants systematic screening, individualized multidisciplinary care, and attentive monitoring of infant growth. By recognizing and addressing eating disorders across the perinatal period, clinicians have an opportunity to improve outcomes not only for mothers but for the health and development of the next generation.

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